



# Machine Learning

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## Large scale data set

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- **The size of data set:** Millions, Billions
- **The dimensionality of data set**
  
- **Fast algorithm**
- **Approximate algorithm**
- **Parallel algorithm**



# Deep Learning

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- Feature Learning



# Sparsity

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- L1 Regularization
- Structured sparsity
- Optimization



# Optimization for Machine Learning

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- Convex optimization
- Gradient descent
- Coordinate Descent
- No-convex optimization